

Chapter 3: Building applications

This chapter explains the rules for designing applications with the Application Editor. Before you begin to build applications, we recommend that you review Chapters 1 and 2 to learn the basics of applications and cells.

The Application Editor is based on the Motif and the X Window System. By using this editor, you can significantly shorten the time required to develop effective applications. While you are designing your application, the Application Editor simultaneously builds the underlying components and structure. After planning the design of your application on paper, you can lay it out on the drawing board. All of the design tools you need are right at your fingertips.

You can design call flows quickly and efficiently with the mouse. Documenting your design is as simple as saving it to disk or printing it. On-line help is available for immediate answers to your questions about Meridian IVR. In addition, as you update your design, the Application Editor automatically builds an executable file.

Note: This chapter highlights the features of the Application Editor. For further information about the Meridian IVR interface and the Motif user environment, refer to the *Meridian IVR Getting Started Guide* (NTP 555-9001-302). The following sections will help you get started:

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- “Selecting prompts” on page 4-5
- “Application Editor” on page 4-5
- “Understanding the basic components” on page 4-8
- “Opening an application” on page 4-26
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- “Arranging cells on the drawing board” on page 4-32
- “Connecting cells” on page 4-38
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Designing an application

Before you begin to build an application, you should sketch the general call flow on paper. The following guides you through the process of creating a call-flow diagram that shows all of the cells in the application.

- Turn to Chapter 4 and review the section “Creating and naming cells” on page 4-11 for an overview of the cell types you can use for your application.
- Turn to Chapter 7 for a complete description of the cell types that you have chosen, and make sure that they are appropriate.
- Sketch a call-flow diagram that shows the cells and the branches from one cell to another. Chapter 7 describes the branches that each cell type can take.
- Give each cell a meaningful name.
- Show the buffers that will be used or updated. Chapter 7 explains how each cell type uses and updates buffers.

Now that you know how your application looks, you can select the prompts you want to use.

Note: For performance reasons, we recommend that an application not exceed 300 cells. If more than 300 cells are required, you should use multiple application files. Refer to GSUB, EXEC, and RETN cells for information on connecting application files.

ATTENTION!

The following is a list of restrictions and limitations regarding the cleanup branch that you must consider when designing your application:

You should avoid using telephony cells, except DMSG, in the cleanup branch.

Do not use the DMSG cell in the cleanup branch when you use shared channels on a Messaging Service Module (MSM).

You should consider timing issues very carefully when developing applications for IVR systems connected to MSMs. The application should take less than 15 seconds to finish after a hang-up occurs. If this condition is not met, calls can be lost and sent to a Revert DN, and, in the case of dedicated channels, channel acquisition is lost.

This means that an application on an MSM that has any type of cell that takes more than 15 seconds to execute will cause calls to be lost (telephony cells excepted).

Selecting prompts

Certain prompts such as “Hello” are used often in applications; therefore we recorded and supplied a set of them for you. These prompts, which we call *standard prompts* (or system prompts), can be all you need for your application. If not, you can compose and record any additional prompts you need.

- Turn to Appendix A and examine the list of standard prompts. Select the ones you need, and write their prompt numbers on your call-flow diagram.
- If additional prompts are required, compose and record them. See the *Meridian IVR System Administration Guide* (NTP 555-9001-300) for instructions on using the Voice Prompt Editor interface, or consult your system administrator.

Application Editor

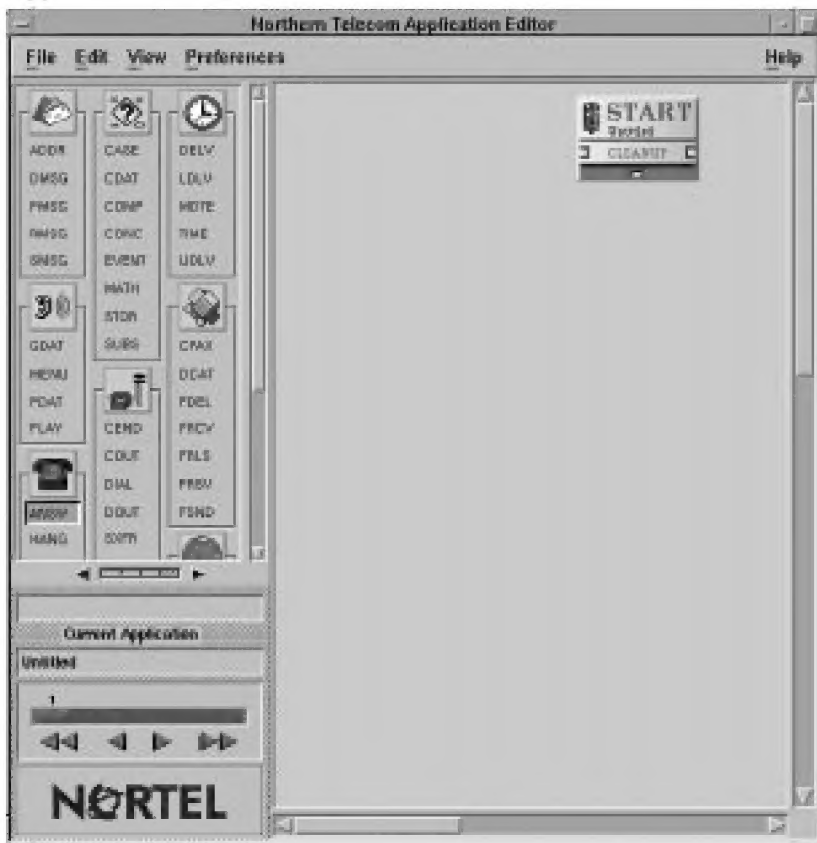
Procedure 3-1

Accessing the Application Editor

- 1 Click on the Application Editor “call-flow icon” with the left mouse button.

The Application Editor opens on the desktop as shown in Figure 3-1.

Figure 3-1
Application Editor



The layout of this window consists of four primary components: the Cell palette, Drawing board, Control area, and Menu bar.

The cell palette is the “toolbox” of available cells, organized by function. The drawing board is the area for laying out the design of your application. The control area includes push buttons and a slider for moving to different pages of the drawing board. Once you open an application, the status window displays which application is on the drawing board and which cell has been selected with the mouse. This chapter describes each component in detail.

Using the mouse in the Application Editor

You can use the mouse to perform several functions in the Application Editor (see Table 3-1).

Table 3-1
Mouse functions for the Application Editor

Button	Action	Application Editor Function
Left mouse button	Click	Selects a cell or icon. Connects the cells. Deselects a cell or icon by clicking anywhere on the Application Editor. To deselect the pencil, point to the "START" (default) cell and click on it with the left mouse button.
	Double-click	Opens the parameter window for the selected cell. Jumps to the page on which a destination cell resides.
	Drag	Moves a slider. Expands/reduces a window. Marks text in a text entry box.
	Hold	(On a scroll bar) scrolls through a list.
Middle mouse button	Click	Places a selected cell on the drawing board. If you do not select a cell on the Drawing Board (that is, the Status Window is blank), you can use the middle mouse button to highlight the cell in the cell palette.
	Drag	Moves a selected cell to another location on the drawing board.
Right mouse button		None.

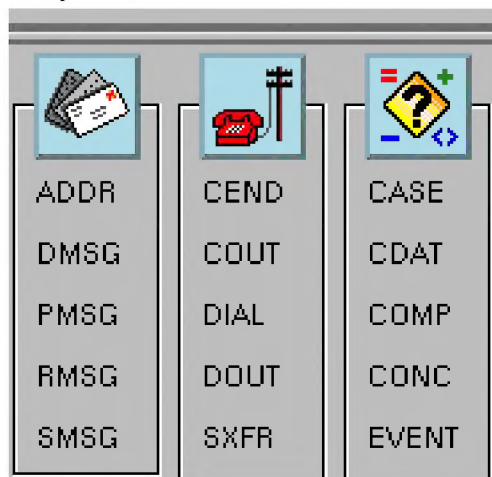
Understanding the basic components

Before you begin using the Application Editor, you should become familiar with how you can use the window components and options to design your application. This section introduces you to the basic features of the Application Editor and explains what you need to begin designing your applications.

Using the cell palette

The cell palette contains all of the cells that you can use to develop a voice application. As you can see in the section of the cells palette shown in Figure 3-2, the cells are organized by function. Each cell function is explained in the following pages.

Figure 3-2
Cell palette



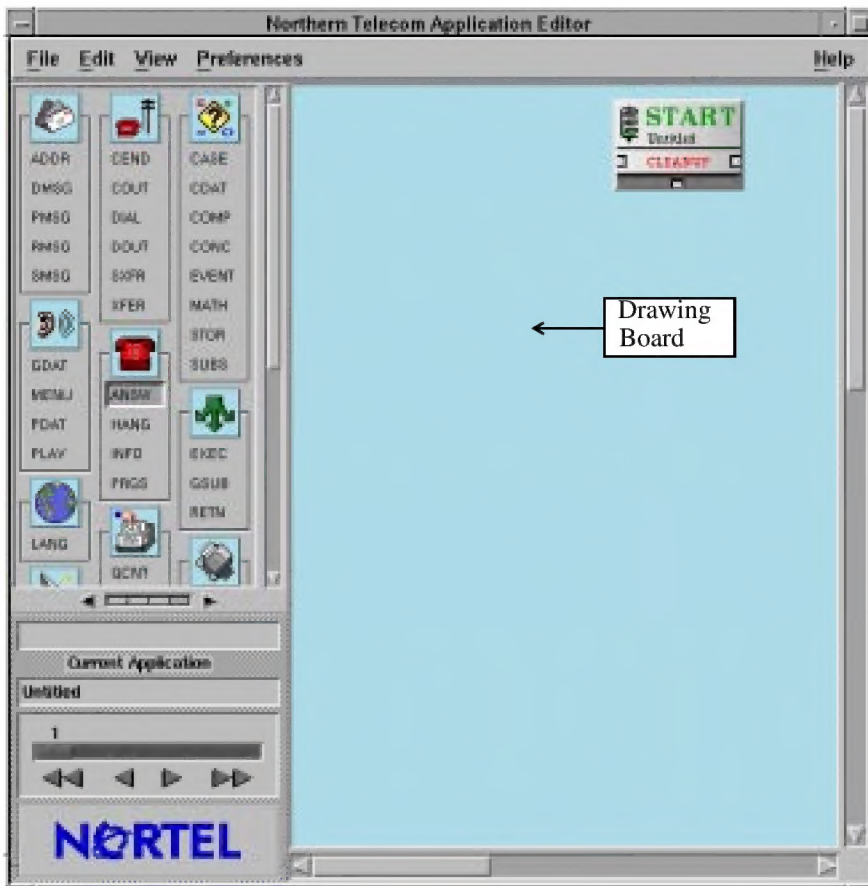
Using the drawing board

The drawing board is the area on the screen where you can design your call flow. As you draw your design, Meridian IVR simultaneously constructs the underlying structure of cells and branches.

As shown in Figure 3-3, the drawing board always includes a START cell which provides an anchor point from which to begin your design, and which sets all application defaults. You can use the scroll bars on the right side and bottom of the window to display other portions of the current page of the drawing board. The drawing board can have one or more pages.

Note: When you print an application (see “Printing your application” in this chapter), each drawing-board page prints as one 8.5 x 11 in. page.

Figure 3-3
The drawing board



Hold down the left or middle mouse button, and drag the scroll bar to move either up or down the drawing board.

Note: To scroll up or down in UNIX shell windows, click on the middle mouse button and drag the mouse on the scroll areas. To scroll one page at a time, place the pointer in the white scroll area and click the left mouse button.

Using the control area

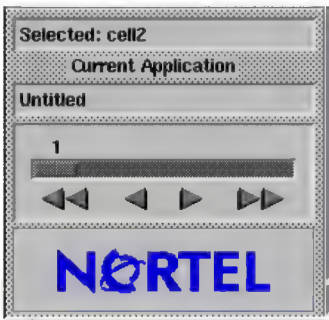
The control area includes a status window that identifies the cell you select, a selection box that lists the name of the current application, and controls you can use to move to another page of the drawing board. In Figure 3-3, the status window, located in the bottom left corner, indicates that no cell on the drawing board has been selected. The application displayed on the drawing board is a new application with the default name “Untitled,” and the Application Editor is displaying page 1 of the drawing board.

The status window

The status window, as shown in Figure 3-4, provides you with immediate feedback on what is happening with the Application Editor.

When this window is blank, the Application Editor is essentially in a neutral state waiting for you to initiate an activity. If you click on a cell with the left mouse button, the Status Window indicates that the cell has been selected. This window also displays a message when you load an application, remove a cell from the drawing board, save the application, and print the application. As soon as you complete your task, the status window is blank again.

Figure 3-4
Monitoring activity with the status window



You will find the status window useful when you are working with cells on different pages. For example, if you select a cell on page 1 then move to page 3 of the drawing board, the Control Area still displays the name of the cell you select until you complete the task. This information helps you to always know which cell you selected.

The current application

The current application selection box displays the name of the application on the drawing board. If this is a new application, this field displays the name “Untitled.” If you save the new application, the selection box displays the new name.

Page navigation

While you are designing your application, your design can expand over one or more pages of the drawing board. The Control Area clearly displays the current page number. You can manipulate the slider or the push buttons to move to another page, as shown in Table 3-2.

Note: Each page of the drawing board is separate from other pages of the drawing board. This feature provides you with the opportunity to modularize your application. You can place different application functions on separate pages to improve the readability and organization of your design. You can create a limitless number of application pages.

Table 3-2
Page navigation

Action	Procedure
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Table 3-2
Page navigation (continued)

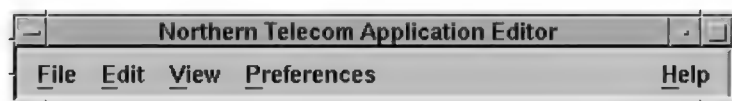
Move to FIRST page	Click with the left mouse button on << push button.
Move to LAST page	Click with the left mouse button on >> push button.
Move to PREVIOUS page	Click with the left mouse button on < push button.
Move to NEXT page	Click with the left mouse button on > push button.
Create a NEW page	Click with the left mouse button on > push button.
Move to any page BEFORE the current page	Drag the page number icon on the slider to the left.
Move to any page AFTER the current page	Drag the page number icon on the slider to the right.

Note: * To create a new page, the last page of the application must be currently displayed. This is the only way to create a new page.

Using the pull-down menus

The menu bar, shown in Figure 3-5, displays options for managing your application files, and the work you are currently doing on the drawing board.

Figure 3-5
Application Editor menu bar



File

Displays a pull-down menu of options for manipulating application files.

Edit

Displays a pull-down menu of options for manipulating data on the drawing board.

View

Displays a pull-down menu of options for managing default parameters.

Help

Displays context-sensitive help for the various options.

Preferences

Displays a pull-down menu of options you can use as default settings.

As shown in Figure 3-6, each option on the menu includes a mnemonic (that is, underscored character) and an accelerator (that is, Ctrl sequence) to provide you with greater flexibility in selecting the option. For example, instead of using the mouse to select the Open option, you can type the letter “O” with the pointer within the menu, or press <Ctrl+o> with the pointer located anywhere in the window. Table 3-3 lists the accelerator keys you can use for the file pull-down menu.

Figure 3-6
File pull-down menu

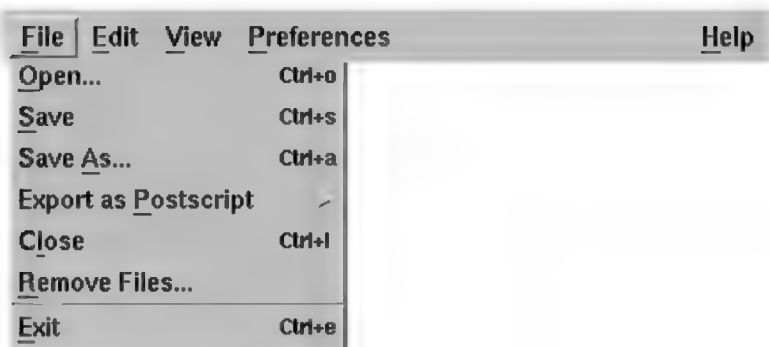


Table 3-3
Accelerator keys: file pull-down menu

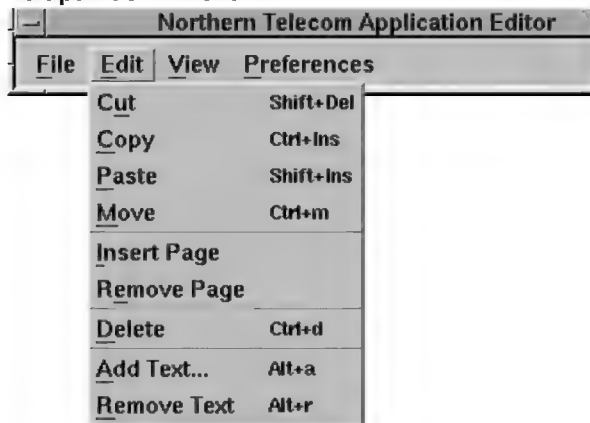
<u>O</u> pen	<Ctrl+o> Displays the File Browser window to select an existing application.
<u>S</u> ave	<Ctrl+s> Saves the current application to the current filename. If the current application is new, it is saved as "Untitled.vpf".
Save <u>A</u> s	<Ctrl+a> Displays the File Browser to save the current application under a new name.
Export as <u>P</u> ostscript	<Ctrl+p> Creates a postscript printer file (with ".ps" extension) with the same name as the application which you can later print using a system command (lp file.ps from the /u/ivr/apps directory).
<u>C</u> lose	<Ctrl+l> Closes the current application file and redisplayes the initial drawing board. If you have made changes to the current application but have not saved them, the Application Editor prompts you to indicate whether or not you want to close without saving your changes. To save your changes, you must explicitly execute a SAVE or SAVE AS function.
<u>R</u> emove <u>F</u> iles	Removes a file.

Edit pull-down menu

You can select the Edit pull-down menu displayed in Figure 3-7 to manipulate cells, modify text, and navigate pages in the application.

Figure 3-7

Edit pull-down menu



Manipulating cells

Procedure 3-2

Cutting and pasting cells

- 1 Place the pointer at the top left-hand corner of the cell.
- 2 Hold down the <Control> and <Shift> keys while you drag the mouse.
A thin outline forms around the cell as you drag the mouse.
Once you release the mouse button, the outline becomes thicker indicating that you selected the cell.
- 3 Click on Edit with the left mouse button, then select Cut.
To save time, press <Shift+Del>.
The application removes the selected cells from the drawing board and places them on the clipboard.
- 4 Click on Edit with the left mouse button, then select Paste.
To save time, press <Shift+Ins>.
A window frame appears.

- 5 Drag the mouse to where you want to paste the cell, then click on the left or middle mouse button.

Procedure 3-3

Copying cells

- 1 Place pointer at the top left hand corner of the cell.
- 2 Hold down the <Control> and <Shift> keys while you drag the mouse.
A thin outline forms around the cell as you drag the mouse.
Once you release the mouse button, the outline becomes thicker indicating that you selected the cell.
- 3 Click on Edit with the left mouse button, then select Copy.
To save time, press <Ctrl+Ins>.
- 4 Click on Edit with the left mouse button, then select Paste.
To save time, press <Shift+Ins>.
A window frame appears.
- 5 Drag the mouse to where you want to copy the cells, then click on the left or middle mouse button.

Procedure 3-4

Moving cells

- 1 Place the pointer at the top left hand corner of the cell.
- 2 Hold down the <Control> and <Shift> keys while you drag the mouse.
A thin outline forms around the cell as you drag the mouse.
Once you release the mouse button, the outline becomes thicker indicating that you selected the cell.
- 3 Click on Edit with the left mouse button, then select Move.
To save time, press <Ctrl+m>.
A window frame appears.
- 4 Drag the mouse to where you want to move the cells, then click on the left or middle mouse button.

As a short cut, you can simply select the cell by holding down the middle mouse button. When the window frame appears, drag the mouse to where you want the cells to appear, then release the mouse button.

Procedure 3-5

Deleting a cell

- 1 Click on the cell with the left mouse button.
- 2 Click on Edit with the left mouse button, then select Delete.
To save time, press <Ctrl+d>.

Manipulating pages

Procedure 3-6

Inserting a page

- 1 Using the slider or arrows in the status window, move to where you want to insert a page.
- 2 Click on Edit with the left mouse button, then select Insert page.
The application inserts the new page following the current page.

Procedure 3-7

Removing a page

- 1 Click on Edit with the left mouse button, then select Remove page.
The application removes the last page.

Modifying text

Procedure 3-8

Adding text

- 1 Click on Edit with the left mouse button, then select Add text.
The Add text window appears.
To save time, press <Alt+a>.
- 2 Type in the text you want to add and select the Font.
- 3 Click on Apply with the left mouse button.
A window frame appears.
- 4 Drag the mouse to where you want the text to appears, then click on the left or middle mouse button.

Procedure 3-9
Moving text

- 1** Select the text you want to move by holding down the middle mouse button.
A window frame appears.
- 2** Drag the window to where you want to move the text, then release the mouse button.

Procedure 3-10
Changing text

- 1** Double-click on the text you want to change with the left mouse button.
The change text box appears.
- 2** Type in the changes, then click on Apply with the left mouse button.

Procedure 3-11
Removing text

- 1** Select the text you want to remove by holding down the middle mouse button.
A window frame appears.
- 2** Click on Edit with the left mouse button, then select Edit.
The text becomes unbolded.
- 3** Click on the text with the left mouse button to remove it.

View pull-down menu

The View menu allows you to manage the appearance of the drawing board, as well as to define the default cell as shown in Figure 3-8. Table 3-4 lists the accelerator keys you can use for the view pull-down menu.

Figure 3-8
View pull-down menu

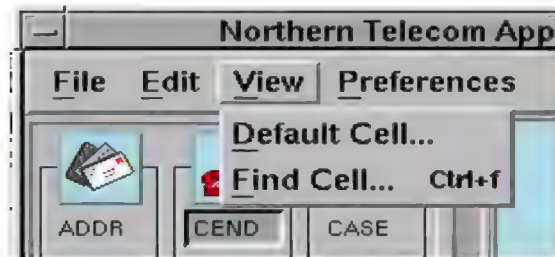


Table 3-4
Accelerator keys: view pull-down menu

<u>D</u> efault Cell	Displays the Application Default pop-up window to modify the default cell parameters.
<u>F</u> ind Cell	<Ctrl+f> Searches for the cell you specify.

Preferences menu

The Preferences pull-down menu as shown in Figure 3-9 allows you to set defaults on your application.

Figure 3-9
Preferences pull-down menu

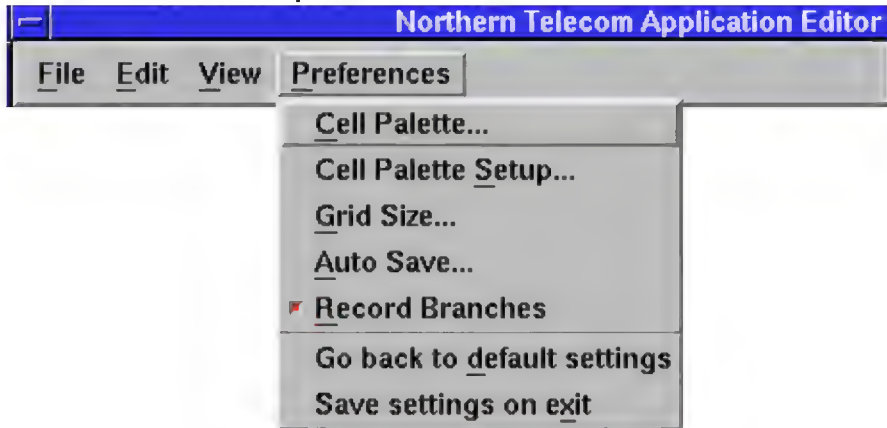


Table 3-5 lists the accelerator keys you can use with the Preferences pull-down menu.

Table 3-5
Accelerator keys: preferences pull-down menu

<u>C</u> ell Palette	Allows you to arrange the order of items on the cell palette.
C <u>e</u> ll Palette Setup	Allows you to specify what items should appear on the desktop.
<u>G</u> rid Size	Allows you to modify the coordinate resolution (pixels) of cells placed on the drawing board. This option aligns cells according to the grid size you select.
<u>A</u> uto Save	Allows you to specify autosave intervals and number of backup files.
R <u>e</u> cord Branches	The red square indicates that this option is enabled.
Go back to <u>d</u> efault settings	Allows you to go back to the default settings that take effect in the next session.
Save settings on <u>e</u> xit	Allows you to save changes when you exit the file. The red square indicates that this option is enabled.

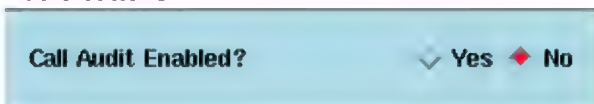
Selecting options with text entry boxes, buttons, and menus

While you are working with the Application Editor, you will notice that options are presented in a variety of ways to provide convenience and flexibility. This section briefly explains how the Application Editor presents options that you can use.

Radio buttons

Think of a radio button as a switch, just like a radio button on your car. It indicates whether or not an option is ON or OFF. To select a radio button, simply click on the button with the left mouse button (see Figure 3-10).

Figure 3-10
Radio buttons



Text entry boxes

A text entry box, for example Figure 3-11, displays the current value for an object (for example, a cell parameter) and is accompanied by an ellipsis push button. To access additional valid values, just click on the push button.

Figure 3-11
Text entry box with push button



There are two ways you can select a new value. You can position the pointer in the text entry box and type a new value, or in some text boxes you can select a value from the Browser.

Table 3-6 lists the ways you can manipulate text entry boxes.

Table 3-6
Manipulating text entry boxes

Action	Process
Select and type over text	Point, click, and drag the left mouse button; type text.
Position insertion point	Click with the left mouse button.
Select and type over nearest word	Point and double-click the left mouse button; type text.
Replace all text	Point and triple-click the left mouse button; type text.

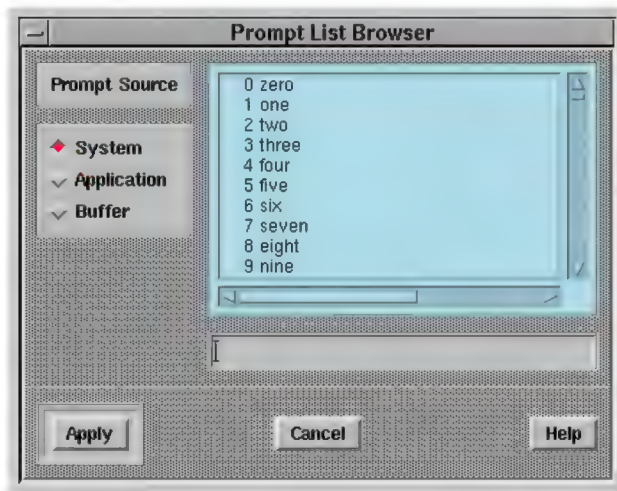
Procedure 3-12

Manipulating text entry boxes

- 1 Click on the ellipsis push button with the left mouse button to display the Browser window. This window lists valid values for the parameter as shown in Figure 3-12.
- 2 Click on the scroll bar with the left mouse button to scroll through the values to the one you want.

The Prompt Source radio buttons on the left side of the following figure indicate with which source the listed values are associated.

Figure 3-12
A browser with a list of valid values



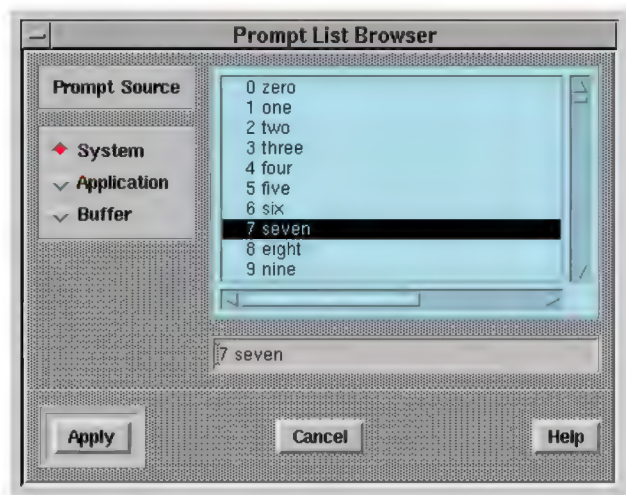
The system radio button is used for the standard prompts that are included with Meridian IVR.

The application radio button is used for the prompts that have been defined specifically for this application.

The buffer radio button lists the available buffers which you can preload with prompt IDs.

- 3 Click on your choice with the left mouse button to highlight it as illustrated in Figure 3-13.

Figure 3-13
Selecting a value from the browser



- 4 To accept the selected value, click on the Apply push button with the left mouse button.

To return to the parameter menu without modifying the value, select the Cancel button.

If you select Cancel, the Application Editor displays the old value. The Browser disappears and the Application Editor displays the new value.

Note: A shortcut to selecting and then applying a value is to simply double-click on a value in the list with the left mouse button.

The digit button

One of the push buttons that you encounter while using the Application Editor is the *digit* button. This button identifies the current value for a parameter which corresponds to one of the digits on a touch-tone pad as shown in Figure 3-14.

Procedure 3-13 **Selecting a different digit Application Editor**

- 1 Click on the digit button with the left mouse button.
The Application Editor displays a touch-tone pad.
- 2 Click on one of the buttons on the touch-tone pad with the left mouse button.

The Application Editor re-displays the digit button with the new value.

Figure 3-14
Selecting digits with a digit push button

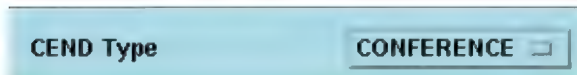


Note: If you select the Default key on the touch-tone pad, the value appears as DFLT. This is the value that is set in the application defaults. For more information, see “Default values for cell parameters” on page 3-29.

Option menus

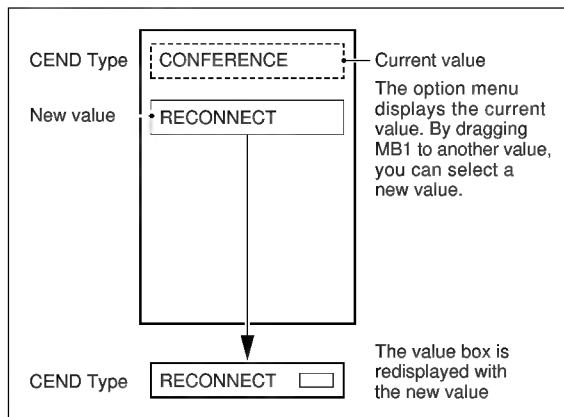
Another method used by the Application Editor to display a current value with easy access to additional options is to display a value box with an underlying *option menu*. To illustrate this, consider Figure 3-15, which displays CONFERENCE as the current CEND Type.

Figure 3-15
Value box



If you click on the value box (CONFERENCE) with the left mouse button, the Application Editor displays a drop-down menu as illustrated in Figure 3-16. Select the option you want with the left mouse button. If you no longer want to change the value, click anywhere on the drawing board with the left mouse button.

Figure 3-16
Option menu



Opening an application

When you invoke the Application Editor, the drawing board is empty except for the START cell. You can either create a new application on the drawing board or open an existing application.

Procedure 3-14 Opening an application

- 1 Select Open from the File menu with the left mouse button.
The Application Browser similar to that shown in Figure 3-17 appears.
- 2 Select the directory you are using for developing applications from the directories scroll area on the Application Browser by clicking in the directory scroll area with the left mouse button (the default directory is */u/ivr/apps*).
- 3 If the desired file is not in the default directory, click on the Filter button of the Application Browser with the left mouse button.
The list of files for this directory appears in the Files scroll area (see Figure 3-17).
- 4 Click on the file you want to open with the left mouse button.
The application name appears in the Selection field of the Application Browser.
- 5 Click on OK with the left mouse button.

The application appears in the drawing board. The application name appears under the Current Application.

Figure 3-17
Application selection window



Fields

File filter

The Application Editor displays only those file names that contain the character-string pattern that you specify in this field. The default filter is `/u/ivr/apps/[^]*.vpf` which displays all file names in the `apps` directory containing the pattern.vpf. To use a different filter, enter a valid UNIX pathname extension in the selection filter box, then click on the filter push button with the left mouse button to execute the query.

Directories

This field is a list of directories that shows the current directory, the parent directory, and any subordinate directories. To select a different directory, click on one of these entries with the left mouse button. The Application Editor displays a new list.

Files

A list of applications in the current directory. You can scroll the list and select a specific file.

Selection

The application file to be selected. When you select a file from the Files list, the Application Editor displays the filename in this box. Otherwise, you can enter a filename directly into this selection box.

Push buttons

OK

This button opens the application displayed in the Selection box.

Filter

This button executes the File Filter query and displays a list of files that match the filter. Pressing <Enter> automatically selects the Filter push button.

Cancel

This button returns control to the Application Editor without opening an application.

Help

This button displays Help information about this window.

You can retrieve an existing application to your drawing board simply by typing the application name in the Selection text entry box and then clicking with the left mouse button on the OK push button.

Note: A shortcut to selecting an application displayed in the Browser list is to double-click on the desired application name with the left mouse button. The Application Editor redisplay the drawing board with the selected application.

To select a file from the Browser list with the filter, follow these steps:

Procedure 3-15

Selecting a file from the Browser list

- 1 Type a character-string pattern in the Filter text entry box.
 Use the default pattern `/u/ivr/apps/[^.*].vpf` as shown in Figure 3-17.
- 2 Click on the Filter push button with the left mouse button.

A list of file names containing the string you specified appears. Notice that all of the files listed in Figure 3-17 include the .vpf string corresponding to the filter.

- 3 Scroll through the list of files.
- 4 Click on the application that you want to open with the left mouse button.

The Application Editor displays the selected application file name in the Selection text entry box.

- 5 Click on the OK push button with the left mouse button to open the selected application file and display it on the editor drawing board.

Default values for cell parameters

The Application Editor provides default values for a variety of parameters used by the cells in your application. You can use or modify the Application Editor defaults.

Note: You can modify these parameters to establish values for parameters that are used universally throughout the application.

To display and modify the default cell parameters, double-click on the START cell with the left mouse button.



CAUTION!

Risk of freezing up the system

Do not double-click on the window corner to close the window, otherwise your system will freeze.

To close the window, click on the Cancel button.

If you are on another page of the drawing board, follow these steps to display the Application Defaults pop-up window as shown in Figure 3-18:

Procedure 3-16

Displaying or updating default cell parameters

- 1 Select the View option on the window menu bar.
The Application Editor displays the View pull-down menu.
- 2 Select the Default Cell option.

Figure 3-18
Default cell parameters

The screenshot shows a dialog box titled "DFLT Parameters". Inside, there is a section labeled "Revision #0" with a small icon of a telephone handset. To the right of this is the text "DFLT DEFAULTS". Below this, there are several fields and controls:

- A text entry box labeled "Untitled".
- A text entry box labeled "Comments".
- A section labeled "Call Audit Enabled?" with a dropdown menu showing "Yes" and a red diamond icon next to "No".
- A section labeled "Call Audit Information" with a text entry box containing "DIGITS" and an ellipsis button "...".
- A section labeled "Message Database" with a text entry box containing "<NONE>" and an ellipsis button "...".
- A section labeled "Abort Digit" with a button labeled "NONE".
- A section labeled "Abort Prompt" with a text entry box containing "17 Recording has" and an ellipsis button "...".
- A section labeled "Termination Digit" with a button labeled "#".

At the bottom of the dialog box, there are three buttons: "Apply", "Cancel", and "Help".

You can change any of these parameters to apply to the current application. Many of the parameter values appear in text entry boxes. For these parameters, you can modify the value directly by selecting the text entry box and typing a new value in the box, or clicking on the associated ellipsis button with the left mouse button to select a value from the Browser.

Some of the parameters appear as digit buttons. When you click with the left mouse button on a digit button, the Application Editor displays the touch-tone pad pop-up window illustrated in Figure 3-19. You can click with the left mouse button on any digit to designate a new default value including “None” to indicate that the default is no digit. Once you select a digit, the touch-tone pad window disappears, and the original digit button is redisplayed with the new value.

Figure 3-19
Default cell parameters touch-tone pad window



Note: The touch-tone pad associated with the Application Defaults window is unique. Other touch-tone pad windows displayed by the Application Editor (for example, when you display the parameters for a specific cell) show a “Default” key in place of “None.” In that case, selecting the Default digit displays the value of DFLT which indicates that the parameter uses the value defined by the application default.

The value for other parameters on the Application Defaults window are indicated by a slider. You can change the current value by dragging the mouse to a new value.

Applying the new default parameters

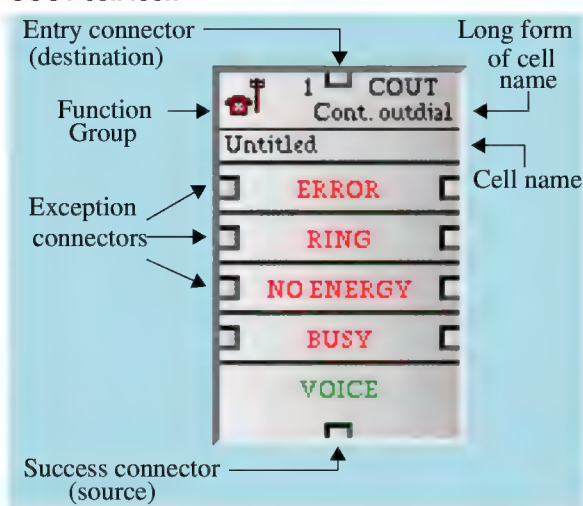
Once you have selected the default values for your application, you can save them and return to the drawing board by clicking on the Apply push button with the left mouse button. If you redisplay the default parameter values, you will see the new values (also, any values that you typed in the entry boxes are included in the Browser list of valid values). You can change the default values at any time while designing your application.

Note: The START cell parameters are the same as the default cell parameters. Modifying the START cell parameters also changes the default cell parameters accessed from the View menu bar option.

Arranging cells on the drawing board

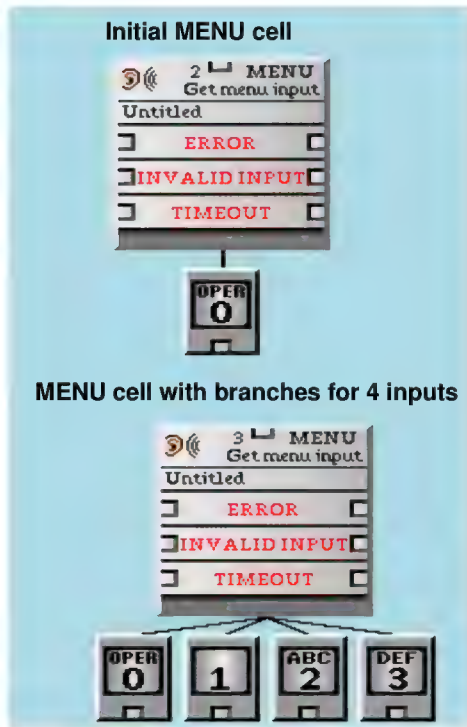
When you place a cell on the drawing board, it appears as an icon (see Figure 3-20). There are a few things you need to remember. The START cell does not have an entry point. A cell can have one or more branch connectors (success and exceptions), except for the EXEC and HANG cells which have no success branches.

Figure 3-20
COUT cell icon



One cell that deserves comment is the MENU cell. Figure 3-21 illustrates a MENU cell as it appears when you create it, and another MENU cell for which four inputs have been defined.

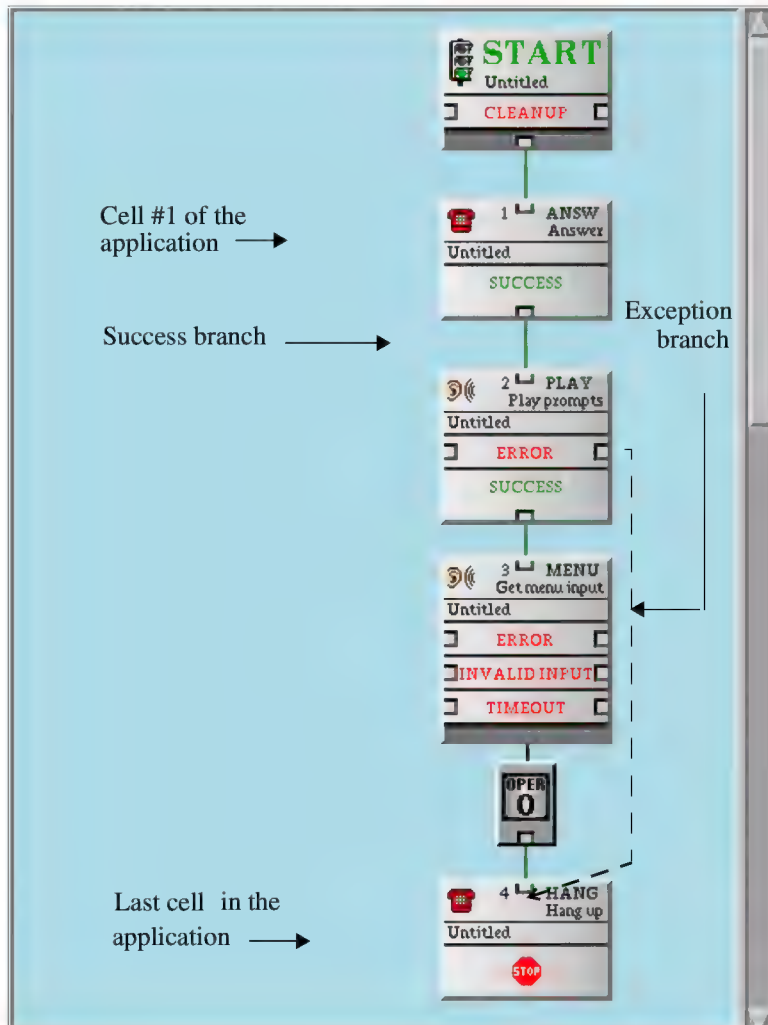
Figure 3-21
MENU cell icon



Normal call flow is top to bottom as shown in Figure 3-22. You select cells from the palette and place them on the drawing board. You can move them anywhere and interconnect them by drawing lines between the branch connectors. You can enter cells only at the top (that is, at the entry connector), whereas you can designate branches from the bottom (success) or sides (exception).

Success branches appear as solid (green) lines, and exception branches appear as dashed (red) lines. Whether you connect an exception branch from the left or right side of the cell, the Application Editor automatically selects the branch connector that minimizes the length of the connection between the two cells.

Figure 3-22
Top-to-bottom call flow



Procedure 3-17**Placing a new cell on the drawing board**

- 1 On the palette, click on the name of the cell you want to select with the left mouse button.

The name of the cell is pushed in showing that you have selected this cell.

- 2 Drag the mouse to where you want to place the cell, then click on the middle mouse button.

The Application Editor displays the cell icon for the cell.

Note: Do not click on a cell that is already on the drawing board because the Application Editor interprets this action as a move-cell operation (see “Moving cells on the drawing board,” in this chapter).

As an alternative to step 2, you can press on the middle mouse button until an outline of the cell appears, drag the mouse to where you want to place the cell, and release the button.

Modifying cell parameters

To display and modify the parameters for a specific cell on the drawing board, double-click on the cell with the left mouse button. The Application Editor displays the current parameters. Figure 3-23 illustrates a parameter pop-up window for a MENU cell.

Figure 3-23
MENU cell parameter pop-up window

MENU Parameters

Cell #1 **MENU** Get menu input

Untitled

Comments

Call Audit Enabled? ☒ Yes ☐ No

Call Audit Information DIGITS

Valid Inputs

Invalid Input Prompt 56 That is an inval

Apply Cancel Help

Enter a unique title in the title text entry box. This title appears on the cell icon and is useful for documenting the purpose of the cell in your application. If you do not specify a title, the cell is listed as “Untitled.” You can also include comments about the cell in the “Comments” text entry box. These comments only appear here.

The current value for each parameter is also listed. Initially, these values are set to the default cell parameters values (see “Displaying or updating default cell parameters,” in this chapter). However, you can change the parameters for each cell. For many cells, you can view all of the parameters together in the pop-up window. However, for other cells, such as the MENU cell, there are numerous parameters. For these cells, you need to scroll through the various parameters in the window. Each parameter pop-up window includes these push buttons:

Apply

Saves your changes and returns to the drawing board.

Cancel

Returns to the drawing board without saving your changes.

Help

Displays on-line documentation regarding the contents of the pop-up window.

Connecting cells

You can connect any two cells using an exception or success branch. To help you connect cells in your application, consider the following:

- There is no preference in the order that you designate cells to be connected.
- A cell can be entered only through the entry connector at the top of the cell.
- A branch must include a source (either a success or exception connector) and a destination (an entry connector).
- While the branch connect tool is active (that is, the pencil cursor appears), you can select multiple cell connectors. The branch is completed and the branch connect tool is deactivated when two sequentially selected cell connectors correspond to a source and a destination connector.
- A branch that exits a cell from one of the sides of the cell icon is an exception branch and it appears as a dashed (red) line. A branch exiting from the bottom of the cell is a success branch and it appears as a solid (green) line.
- When you are creating an exception branch, you can select either side of the cell. However, the Application Editor automatically selects the side that results in the shortest connection.
- Each source connector must have a destination; otherwise, when you save your application, the Application Editor automatically connects it to the first cell inserted in your application.

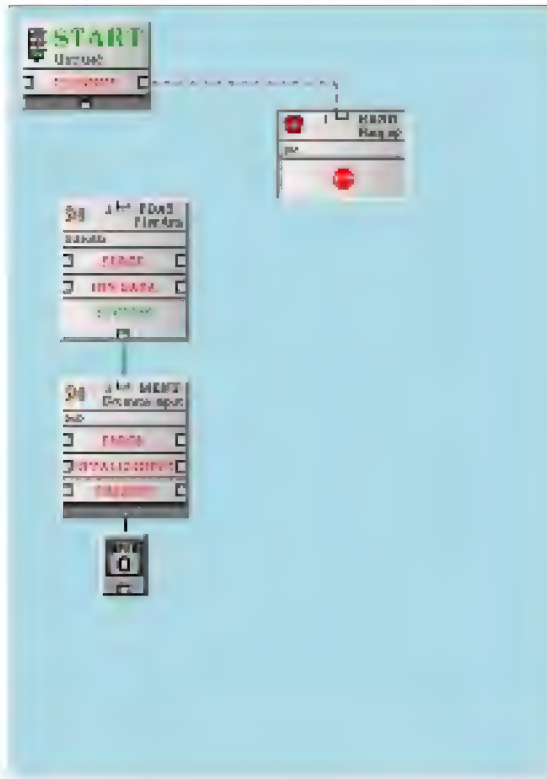
Procedure 3-18 **Connecting cells**

- 1 Click on a cell connector with the left mouse button.

The pointer changes to a pencil cursor.

You can use the pencil cursor to connect cells as shown in Figure 3-24.

Figure 3-24
Using the pencil cursor to connect cells



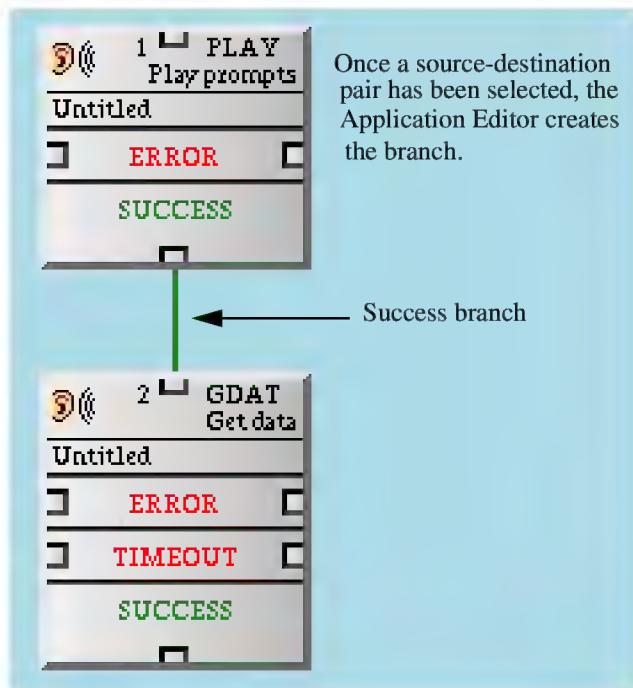
- 2 Point (the pencil) and click on a connector of the other cell with the left mouse button to form a source-destination pair.

As illustrated in Figure 3-25, the Application Editor creates the connection as a success branch.

Figure 3-26 illustrates both success and exception branches.

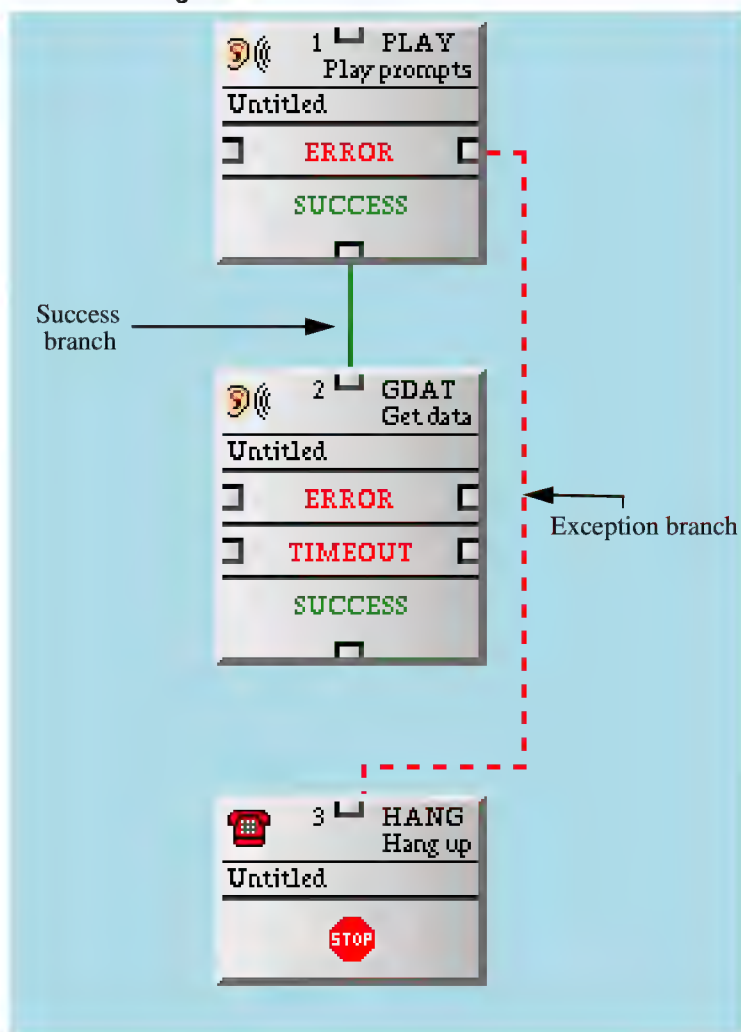
You can deselect the pencil by pointing to the “START” (default) cell and clicking on it with the left mouse button.

Figure 3-25
Success branch



Note: A shortcut to connecting cells is to create the first cell, click on the cell's branch connector with the left mouse button, then create the next cell on the drawing board. Because you activate the branch connect tool before creating the second cell, the Application Editor automatically generates the branch when you create the cell. This technique is particularly useful when you are creating/connecting cells between pages.

Figure 3-26
Interconnecting cells



Off-page connectors

If you connect cells on the same page of the drawing board, you can easily see that the cells are interconnected. However, in some instances your call flow can have several drawing board pages. To create a branch between Cell A on the current page and Cell B on another page follow these steps:

Procedure 3-19

Connecting a cell to a cell on another page

- 1** Click on the branch connector of Cell A on the current page with the left mouse button.
The pointer changes to the pencil cursor.
- 2** Using the mouse, move the pointer to the Control Area and display the page containing Cell B.
- 3** Point (the pencil cursor) and click on the branch connector of Cell B with the left mouse button to complete the source-destination pair.

The Application Editor displays TO and FROM off-page connectors to indicate where the branch is. Figure 3-27 illustrates a TO off-page connector that branches from the GSUB cell to a PDAT cell on page 2 of the drawing board. It also illustrates another TO off-page connector that branches to the HANG cell on page 2 if an ERROR occurs during processing of the GSUB cell. Figure 3-28 shows the corresponding FROM off-page connectors.

Figure 3-27
Branching to a cell on another page

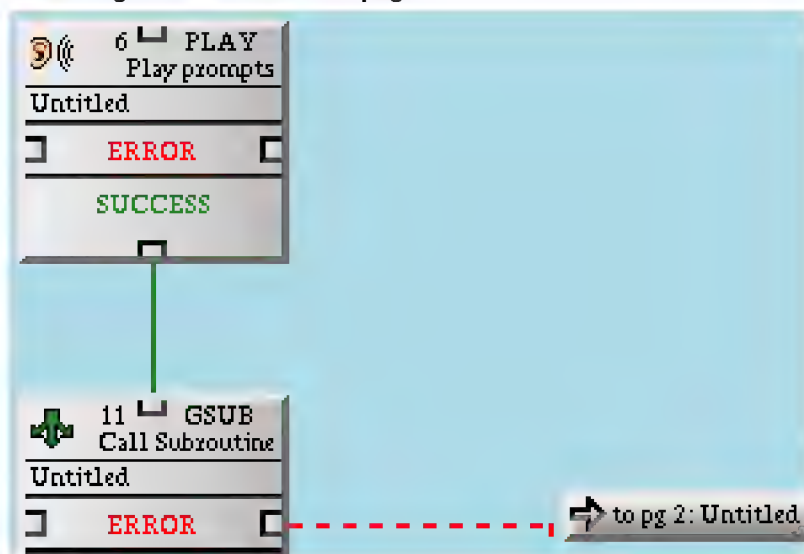
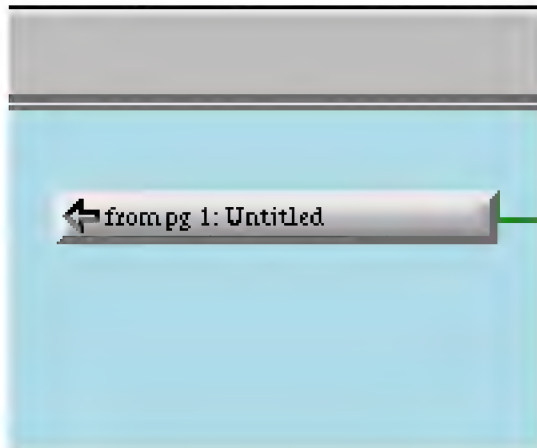


Figure 3-28
Identifying a branch from a cell on another page



If you double-click on an off-page connector with the left mouse button, the Application Editor goes directly to the indicated page and selects the destination cell to help you find it. For example, double-clicking on the off-page connector in Figure 3-28 redisplayes page 1 and automatically selects the GSUB cell in Figure 3-27.

Moving cells on the drawing board

You can move a cell on the drawing board to somewhere else either on the same page or to another page. The Application Editor maintains all of the cell branches. This section describes how to move a cell and illustrates how the various branches reappear.

Note: You should move HANG cells to a separate page because as you design your application, you will find it easier to route different cells to the same HANG cell. However, the clutter of connecting lines makes the layout difficult to understand. By moving HANG cells to a separate page, you improve the readability of the layout since off-page connectors replace the connecting lines.

Procedure 3-20 **Moving a cell on the same page**

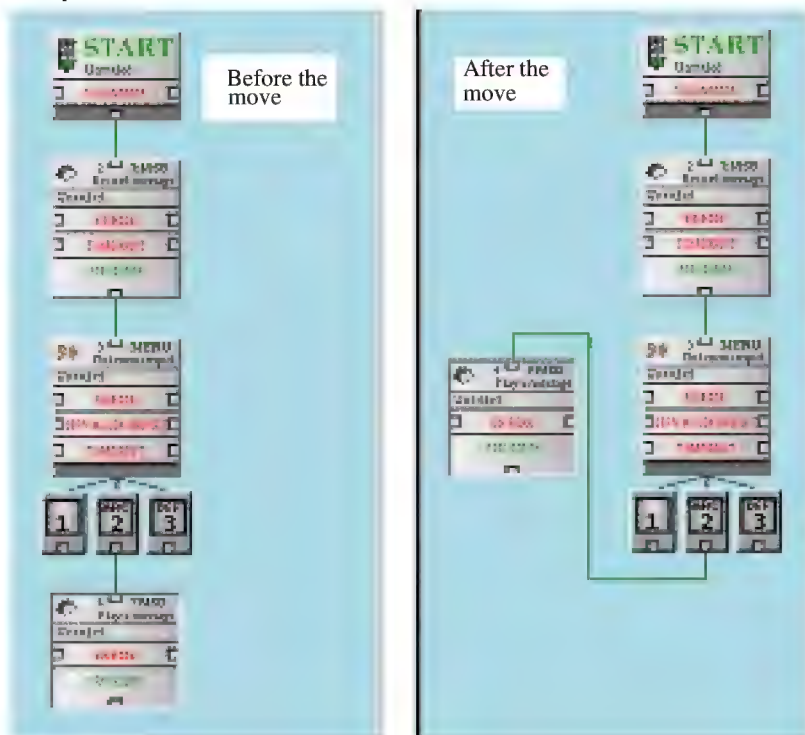
- 1 Click on the cell that you want to move with the left mouse button.
- 2 Drag the middle mouse button to the new location.

Any branches associated with the cell are automatically resized to maintain the connection.

Figure 3-29 illustrates the before and after screens seen when moving the Play a Message (PMSG) cell.

Note: If you select a cell and move the pointer to another cell before pressing the middle mouse button, the selected cell disappears from the display after you press the middle mouse button. The cell is still present but not visible. To redisplay the cell, move to another page, and then return to the page where the cell resides. The “disappearing” cell will be redisplayed.

Figure 3-29
Sample move of a cell



Procedure 3-21

Moving a cell to another page

- 1** Click on the cell you want to move with the left mouse button.

The Status Window indicates that the cell has been selected.
- 2** Display the page to which the cell is moving by using the page selector push buttons or slider.

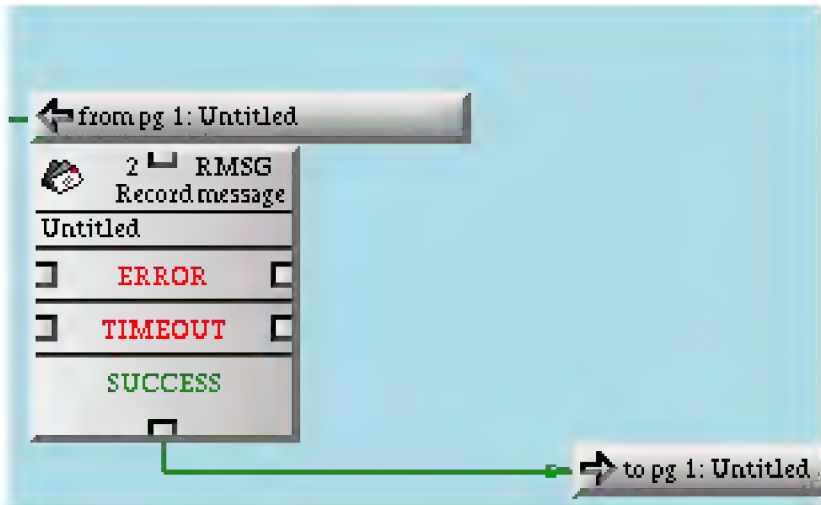
Notice that the Status Window indicates that the cell is still selected.
- 3** Press on the middle mouse button and drag the mouse to the location on the drawing board where you want to place the cell.

The Application Editor displays the cell you have moved with all branches intact.

Those branches that are now off-page are identified by off-page connectors. (At this point the Status Window is empty indicating that the cell is no longer selected.)

Figure 3-30 illustrates the RMSG cell shown in Figure 3-29 moved to page 2 of the drawing board.

Figure 3-30
Cell moved to another page



Removing cells from your application

While you are laying out your design, you may need to remove one or more cells from your application. If so, you need to remember that the Application Editor removes a cell that has branches to and from other cells.

ATTENTION!

You should *never* remove cell #1 (the HANG cell), the first cell that you create on the drawing board. This cell is required because all the error branches that are not defined in an application, go to that first cell, and the HANG cell allows you to hang up the call.

Procedure 3-22
Removing cells

- 1 Redirect each branch entering the cell to a different destination. To do this, click on the source connector with the left mouse button to activate the pencil cursor.
- 2 Point the pencil cursor on a connector of a different cell, then click on the left mouse button.

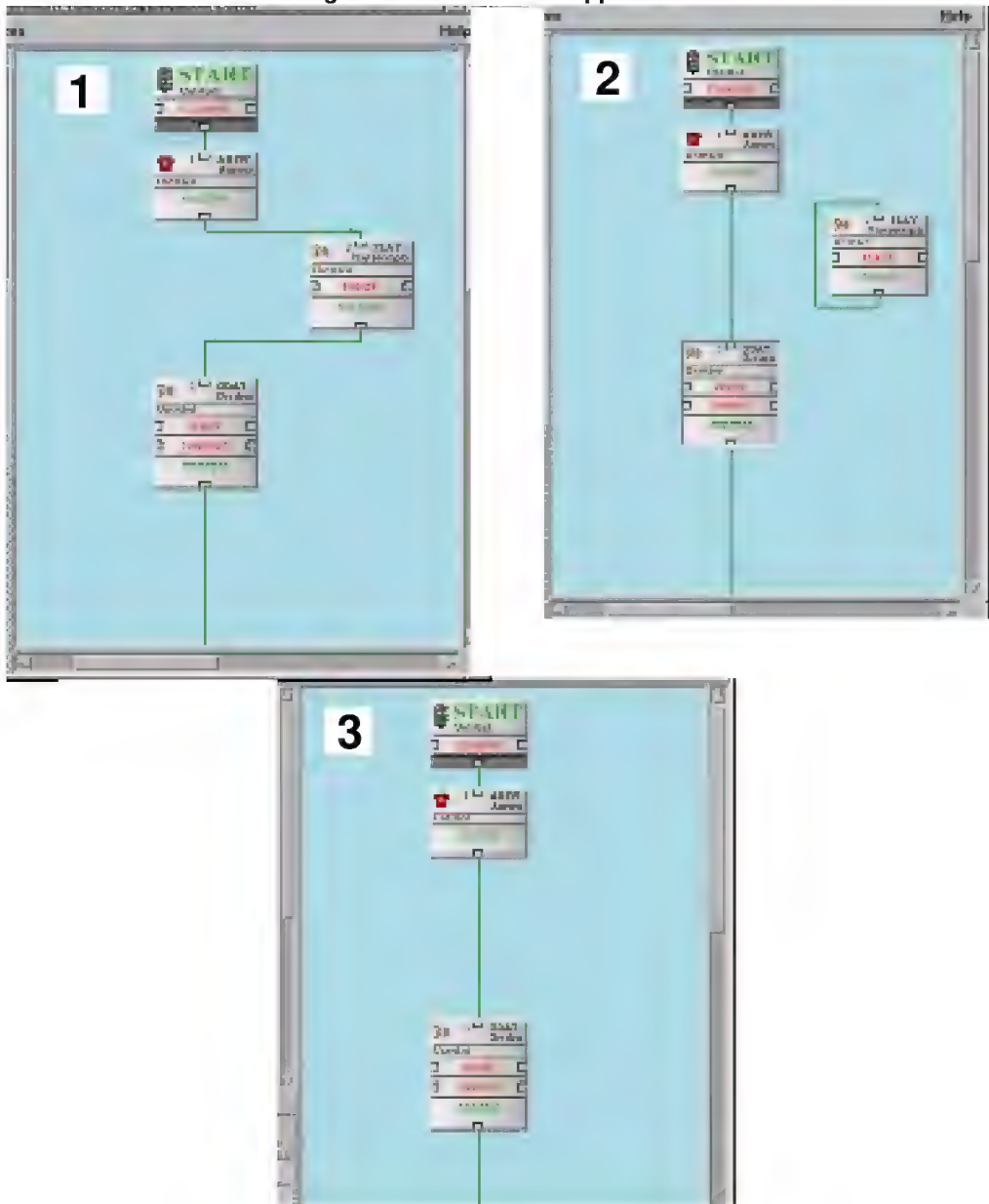
Repeat this process until all incoming branches are redirected.
- 3 Redirect each of the cell's outgoing branches (success and exceptions) to the cell's entry connector. To do this, click on the branch connector with the left mouse button to activate the pencil cursor.
- 4 Click on the cell's entry connector with the left mouse button.

Repeat this process until all outgoing branches have been redirected.
- 5 Click on the cell with the left mouse button to select it.
- 6 Select the Delete option from the Edit pull-down menu (or use the <Ctrl+d> keyboard accelerator).

The Application Editor removes the cell from the drawing board.

Figure 3-31 illustrates (1) a PLAY cell in an application, (2) the PLAY cell with all of its branches redirected, and (3) the application with the PLAY cell removed.

Figure 3-31
Removing a PLAY cell from an application



Saving your application

As a matter of prudent design technique, you should save the application on the drawing board often. You have the option of saving the application under its current name (for example, the name displayed in the “Current Application” box in the Control Area), using the Save option. You also have the option of saving an application under a new name using the Save As option.

Procedure 3-23

Saving the application under the current name

- 1 Click on the File with the left mouse button.

The Application Editor displays the File pull-down menu.

- 2 Click on the Save option with the left mouse button.

The Application Editor saves the application.

(As an alternative to steps 1 and 2, you can press <Ctrl+s>).

Procedure 3-24

Saving the application under a new name

- 1 Click on the File with the left mouse button.

The Application Editor displays the File pull-down menu.

- 2 Click on the Save As option with the left mouse button.

The Application Editor displays the File Browser.

(As an alternative to steps 1 and 2, you can press <Ctrl+a> to display the File Browser).

- 3 Enter a new name in the text entry box, and click on the OK push button with the left mouse button.

The Application Editor saves the application on the drawing board to the new file name. See Figure 3-32.

Figure 3-32
Saving an application under a new name



Printing your application

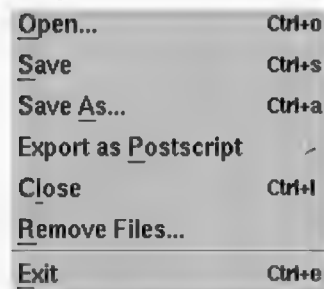
The Application Editor provides a facility for postscripting your application with a listing of cell parameters, databases, user functions, prompts, and buffers used by the application. Each page of the drawing board prints as a single page.

Note: You need a Postscript printer to print your application.

Procedure 3-25 Printing your application

- 1 Click on File with the left mouse button.
The Application Editor displays a pull-down menu.
- 2 Click on the Export as Postscript option with the left mouse button.
The Application Editor displays the following pull-down menu.
 (As an alternative to steps 1 and 2, you can press the <Ctrl+p> keyboard accelerator which automatically creates a Postscript file of your application.)

Figure 3-33
File pull-down menu with Postscript option



- 3** Click on All in the sub-menu with the left mouse button.

The Application Editor generates a Postscript file (in the /u/ivr/apps directory) with the same name as your application (that is with the .ps extension).

To postscript only the call flow, click on the Call Flow option with the left mouse button.

To postscript only the contents of the selected cell, click on the cell content option with the left mouse button.

- 4** Move the pointer to another window running the system shell.
- 5** Enter the appropriate print command for printing .ps files (for example, **lp /u/ivr/apps/LeaveMsg.ps**) at the command prompt.

Developing and testing applications on a live system

Meridian IVR systems include both a development and run-time capability so that you can develop and test IVR applications on the same system.

Therefore, you can make minor modifications to an existing application while the system is running. This is valuable for customers who may need to quickly add another selection to a menu (for example, an airline that has just announced a seat sale).

If you are using the Meridian IVR system for new application development or application modification in a “live” customer environment, you should ensure that the new application development or testing does not impact existing running applications.

ATTENTION!

Do not change the live application itself. Rather, you should copy the application, then modify and test the copy on a dedicated test channel that is isolated from normal customer traffic. After you have done this, replace the application with the new modified version.

Response times can be impacted

On-line development using the Application Editor consumes CPU cycles and thus impacts the response times of running applications. To minimize the risk, we recommend that you make such changes during a relatively low traffic period.



CAUTION!

Risk of damaging system

Do not test applications that use custom User Functions (“C” code) on a live system as a poorly written untested custom “C” program can potentially cause severe damage on a live system. In addition, the compilation of “C” code on a live system uses a lot of CPU cycles which can impact the response time of live applications

Ensure that the test environment is isolated

While testing new applications, ensure that the application test environment classes such as Meridian Mail and IVR channels, ACD routing, VSDN, and ACCESS are fully isolated from the live applications and, as such, do not impact live applications. We recommend that you following the following guidelines:

- 1 Preliminary testing by the VAD on a captive development Meridian IVR system, including Meridian Mail and Meridian 1 PBX with trunks, is necessary but not sufficient. Controlled testing to prove the sanity of the application on a live system is still needed even after the best efforts of testing on a captive development system.
- 2 To minimize the risk of service interruptions, you should test new or modified call-flow applications in three phases:

Phase 1

Test channels isolated from receiving customer traffic; tester-generated traffic only.

Phase 2

A single monitored test channel receiving customer traffic.

Phase 3

A few monitored test channels receiving customer traffic.

- 3 When testing applications, you must understand the distinctions between Meridian IVR logical channel acquisition type (dedicated versus shared), Meridian Mail voice service channel service type (ACCESS versus ALL), and Meridian 1 PBX ACD traffic routing (dedicated versus shared). When speaking of dedicated test channels, we are referring to some combined configuration which gives you the degree of control necessary for the particular application and phase of testing.
- 4 If possible, you should test new or modified applications on test channels of dedicated acquisition type to avoid impacting live applications when setting up or taking down the isolated test environment.

Note that some applications require that Meridian IVR logical channels be configured for shared acquisition type.

- 5 Dedicated acquisition type can tie a Meridian IVR logical channel to an individual Meridian Mail voice channel. You can route test traffic to the application that is being proved by assigning the ACD Agent Position for the test channel to a Meridian Mail MC-DN that can be dedicated to routing test calls only. This is achieved most conveniently by using ACD Automatic Overflow. It changes the Overflow DN's to selectively route live customer traffic into the test channel during Phase 2 and Phase 3 testing, and whenever it is not being used for testing. During Phase 1 testing, you can prevent customer traffic from overflowing into the test channel.
- 6 Shared acquisition type depends on the ACCESS class defined for the logical channel and for the dialed DN in the Meridian Mail VSDN table. The Meridian IVR logical channel, therefore, is tied to the dialed DN (and not to any individual Meridian Mail voice channel). Establishing an isolated test environment with shared acquisition type involves configuring a Meridian IVR logical channel with an ACCESS class that is dedicated to the test application and the dialed DN.
- 7 With shared acquisition type, it is impossible to switch a logical channel between customer traffic and tester-generated traffic without interrupting service on all channels. This is because the switch is accomplished by changing the class of the logical channel through Meridian IVR system configuration. Reconfiguring a single logical channel requires that all Meridian IVR channels be stopped and restarted. This momentarily interrupts service on all live applications.
- 8 You must control ACD traffic routing on the Meridian 1 PBX so that the number of Meridian Mail voice channels that can present calls to ACCESS VSDNs of a given class does not exceed the number of active Meridian IVR logical channels configured for the given class. Otherwise, some calls will be answered only to be transferred to the Revert DN. Again, ACD Automatic Overflow provides the most convenient means of controlling call routing in the Meridian 1 PBX. You can change the Overflow DN's to prevent excess calls from being presented to logical channels of shared acquisition type.
- 9 You cannot set outbound applications to run exclusively against a particular Meridian IVR logical channel. Therefore, it is impossible to establish an isolated test environment for outbound applications on a live system.

- 10 Meridian IVR Application Management provides the capability to stop an application gracefully or forcefully. STOP FORCEFULLY idles logical channels that are hung due to User Function Cell failure to return or other application misbehavior. It does not recover logical channels that are out of service due to Meridian Mail Link or ACCESS problems.
- 11 To minimize service interruption when using STOP FORCEFULLY to recover hung Meridian IVR logical channels, load a separate instance of a given application (copied and suitably renamed) for each logical channel or small range of logical channel. Use STOP GRACEFULLY, monitor the channel board lights until only the hung channel is still busy, then use STOP FORCEFULLY to recover the hung channel.
- 12 Until you start the application for the range of channels again, customer calls are still presented to the stop channels, and each is answered and transferred back to the dialed DN which puts the caller to the back of the queue. You can replace the original CLID by the Agent Position ID of the transferring Meridian Mail agent.
- 13 When testing applications which use new or modified voice prompts, it is critical that you back up existing voice segment files by copying them to tape with the Meridian Mail ACCESS Prompt Transfer Tool.
- 14 You must create a dedicated test mailbox, and configure the Meridian IVR test channels to use the dedicated test mailbox. If you need to add or modify voice segments, you must copy the backup of the voice segment files currently in use into the test mailbox. You should test all changes thoroughly before copying the modified voice segment files into the mailbox that provides the voice prompts for customer traffic.

Note: Changing the mailbox for a single logical channel in Meridian IVR system configuration requires that you start all Meridian IVR channels so that the reconfiguration takes effect.

Executing your application

Once you save your application, you can load it then run it on a voice channel. You do not need to compile the application. However, you should discuss with your system administrator the resources and the testing configuration that your application needs.

Note: Any application you build with the Application Editor executes, no matter how erroneous the logic is. Consequently, you should test your application to ensure that your objectives are achieved during runtime prior to accepting live calls.

Closing and exiting your application

If you want to clear the drawing board without exiting the Application Editor, you can close the current application.

Procedure 3-26

Closing an application

- 1 Click on File with the left mouse button.

The Application Editor displays the File pull-down menu.

- 2 Click on Close with the left mouse button.

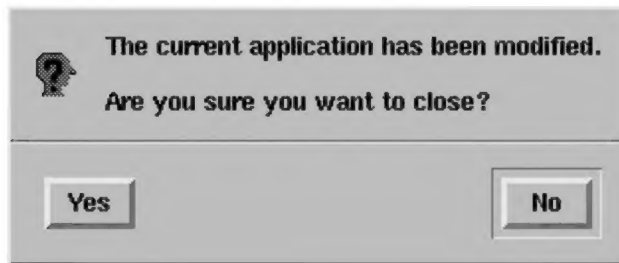
(As an alternative to steps 1 and 2, you can press <Ctrl+L>).

Unless you have made changes since last saving the application, the Application Editor clears the drawing board and displays its initial setup with only the START cell. If this is the case, the Application Editor displays the dialog box illustrated in Figure 3-34.

- 3 Select YES to close without saving the changes.

Or, select NO to cancel the close operation, and return to the drawing board.

Figure 3-34
Close or exit without save warning



Procedure 3-27
Exiting the Application Editor

- 1 Click on File with the left mouse button.

The Application Editor displays the File pull-down menu.

- 2 Click on Exit with the left mouse button.

(As an alternative to steps 1 and 2, you can press <Ctrl+E>).

The Application Editor does not perform a Save/Exit operation.

Consequently, if you made changes to the application since the last save, the Application Editor displays the same dialog box illustrated in Figure 3-34.

- 3 Select YES to exit the Application Editor without saving the changes.

Or, select NO to cancel the exit operation, and return to the drawing board.

Deleting an application

Procedure 3-28

Deleting an application

- 1 Go to the UNIX shell window.
- 1 Change to the correct directory by typing **cd /u/ivr/apps**, and press <Enter>.
- 2 Type **rm filename.vpf**, and press <Enter>.

Note: If you created a Postscript version (that is, the application was printed), type **rm filename.ps**, and press <Enter>.



CAUTION! **Risk of losing application**

Once you delete an application you cannot retrieve it.